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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,395	10/04/2004	Wayne Robert Tompkin	1093-109 PCT/US	6290

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EXAMINER	
KHOSHNOODI, NADIA	

ART UNIT	PAPER NUMBER
2437	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/510,395	TOMPKIN ET AL.	
	Examiner	Art Unit	
	NADIA KHOSHNOODI	2437	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-19* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments

Applicant's amendments/arguments, see remarks and amendments to claims, filed 2/6/2009, with respect to the pending claims have been fully considered. Examiner agrees that Staub did not disclose various elements argued by Applicant's Representative, however, upon conducting an updated search Examiner has come across a reference which reads on the claimed invention. Since the amendments to the claims were not extensive enough to change the scope of the claims, a Final Rejection would not be proper at this point in time. Thus, another Non-final Rejection appears below.

Allowable Subject Matter

I. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

II. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

III. Claims 1-10 and 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tompkin et al., US Patent No. 6,060,143 and further in view of Staub et al., US Patent No. 6,324,004.

As per claim 1:

Tompkin et al. substantially teach a security element comprising: a layer composite including a surface pattern with microscopically fine optically effective structures, which are embedded between transparent layers of the layer composite, wherein the optically effective structures are shaped into a reflecting interface in surface portions of a security feature in a plane of the surface pattern, (col. 3, line 48 – col. 4, line 6 and col. 6, lines 9-42), wherein at least one of the surface portions having a dimension greater than .4mm comprises a diffraction structure, the diffractive structure formed by additive or subtractive superimposition of a superimposition function (M) and a microscopically fine relief profile (R) (col. 2, lines 31-42); the relief profile (R) defined by a light-diffracting or light-scattering, optically effective structure which, is unchanged in a region of the superimposition function (M) (col. 4, lines 21-30); and the superimposition function (M) defined by a macroscopic structure, wherein a central surface defined by the superimposition function (M) is curved at least in partial regions and at any point has an angle of inclination predetermined by a gradient of the superimposition function (M), wherein the superimposition function (M) is not a periodic triangular or rectangular function and wherein the superimposition function (M) varies less than the relief profile at least in the partial regions (col. 3, lines 1-37 and col. 4, lines 38-67).

Not explicitly disclosed is wherein the plane is defined by co-ordinate axes (x; y) and wherein the superimposition function (M), the relief profile (R) and the diffraction structure are

functions of the co-ordinate axes (x; y). However, Staub et al. teach that the plane is defined by coordinate axes (x;y) where the various functions/structures would also be functions of the coordinate axes (col. 6, lines 15-47). Therefore, it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Tompkin et al. to use the coordinate axes (x;y) and have the superimposition function (M), the relief profile (R), and the diffraction structure to be functions of that coordinate axes as well. This modification would have been obvious because a person having ordinary skill in the art, at the time the invention was made, would have been motivated to do so since Staub et al. suggest that using the (x;y) coordinate axes on a plane keeps track of phase shifts of the various elements involved in col. 6, lines 15-47.

As per claim 2:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Staub et al. teach wherein the superimposition function (M) in the at least one surface portion is a steady, periodic function with a spatial frequency of at most 20 lines/mm (col. 6, lines 48-54).

As per claim 3:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Staub et al. teach wherein the superimposition function (M) in the at least one surface portion is an asymmetrical, steady, periodic function with a spatial frequency in the range of between 2.5 lines/mm and 10 lines/mm (col. 2, lines 58-67).

As per claim 4:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Staub et al. teach wherein adjacent extreme values of the superimposition function (M) in the surface portion are remote from each other by at least 0.025 mm (col. 4, lines 24-43).

As per claim 5:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 2. Furthermore, Staub et al. teach wherein relief profile (R) is a diffraction grating of constant profile height, which has a grating vector with an azimuth angle and with a spatial frequency of greater than 300 lines/mm (col. 6, lines 8-14).

As per claim 6:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 2. Furthermore, Tompkin et al. teach wherein the relief profile (R) is an anisotropic matt structure which has a preferred direction with an azimuth angle (col. 8, lines 29-39).

As per claim 7:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 5. Furthermore, Staub et al. teach wherein the security feature has at least two adjacent surface portions and wherein a first diffraction structure is shaped in a first surface portion and a second diffraction structure which differs from the first diffraction structure is shaped in a second surface portion, wherein the grating vector or the preferred direction of a first relief profile (R) in the first surface portion and the grating vector or the preferred direction of the second relief profile (R) in the second surface portion are directed substantially parallel (col. 3, line 59 – col. 4, line 17).

As per claim 8:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 5. Furthermore, Tompkin et al. wherein the diffraction structure the grating vector or the preferred direction of the relief profile (R) is substantially parallel to a gradient plane which is determined by the gradient of the superimposition function (M) and a surface normal which is perpendicular to the surface of the layer composite (col. 7, lines 2-19).

As per claim 9:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 5. Furthermore, Staub et al. teach wherein shaped in a first surface portion is a first diffraction structure which is formed as the sum of the relief profile (R) and the superimposition function (M) and wherein shaped in a second surface portion is the second diffraction structure which is formed as the difference (R-M) of the same relief profile (R) and the same superimposition function (M) (col. 7, line 56 - col. 8, line 14).

As per claim 10:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 5. Furthermore, Tompkin et al. teach wherein in the diffraction structure the grating vector or the preferred direction of the relief profile (R) is substantially perpendicular to a gradient plane which is determined by the gradient of the superimposition function (M) and a surface normal which is perpendicular to the surface of the layer composite (col. 6, line 20 – col. 7, line 9).

As per claim 12:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 5. Furthermore, Staub et al. teach wherein in a first surface portion a first diffraction structure is formed from the sum of the relief profile (R) and the superimposition function (M) and wherein in a second surface portion a second diffraction structure is formed from the first diffraction structure (S) (col. 5, lines 7-20 and col. 6, lines 15-47).

As per claim 13:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 5. Furthermore, Staub et al. teach wherein the diffraction structure formed as the sum of the superimposition function (M) and the relief profile (R) is shaped in at least one surface portion, wherein the spatial frequency of the relief profile (R) is less than 2400 lines/mm and the superimposition function (M) has an inclination (.gamma.) measured in the diffraction plane of the relief profile (R) (col. 6, lines 8-14), wherein the surface portion adjoins a background field of the security feature, wherein the background field parallel to the cover layer has the central surface with the inclination .gamma.=0.degree. into which a sinusoidal diffraction grating with a second spatial frequency and with a grating vector oriented in parallel in the diffraction plane of the relief profile (R) is shaped (col. 5, lines 41-67), wherein the second spatial frequency is so selected that upon perpendicular illumination with white light in one viewing direction at a predetermined positive viewing angle the surface portion and the background field do not differ with respect to of the color of the diffracted light (col. 6, lines 48-65) and wherein that after a 180.degree. rotation of the layer composite about the surface normal at the negative viewing angle the surface portion and the background field differ with respect to the color of the diffracted light (col. 6, lines 15-48).

As per claim 14:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Staub et al. teach wherein the relief profile (R) is an isotropic matt structure (col. 3, lines 25-35).

As per claim 15:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 14. Furthermore, Tompkin et al. teach wherein the superimposition function (M) describes a relief image (col. 6, lines 9-20).

As per claim 16:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 14. Furthermore, Staub et al. teach wherein the superimposition function (M) describes a portion of a sphere (col. 6, lines 44-65).

As per claim 17:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Tompkin et al. teach wherein the diffraction structure is restricted to a structure height of less than 40 .mu.m and the superimposition function (M) is restricted to a variation value (H) of less than 30 .mu.m (col. 2, lines 31-42), wherein the value of the superimposition function (M), which is used in the diffraction structure is equal to {(M)+C(x; y)} modulo variation value (H)-C(x; y), wherein the function C(x; y) is restricted in amount to half the structure height (col. 6, lines 9-42).

As per claim 18:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Tompkin et al. teach wherein surface elements having optically effective structures are parts of the surface pattern and at least one of the structure elements adjoins the security feature (col. 5, line 66 – col. 6, line 13).

As per claim 19:

Tompkin et al. and Staub et al. substantially teach the security element as set forth in claim 1. Furthermore, Tompkin et al. teach wherein arranged on at least one of the surface portions is at least one identification mark with another optically effective structure differing from the diffraction structure (col. 5, lines 61 - col. 6, line 12) and, wherein that identification mark which can be used as a reference for orientation of the layer composite comprises at least one of a diffractive relief structure, a light-scattering relief structure and a mirror surface (col. 6, lines 12- 20).

**References Cited, Not Used*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US Patent No. 7,311,043
2. US Patent No. 7,054,042

The above references have been cited because they are relevant due to the manner in which the invention has been claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NADIA KHOSHNOODI whose telephone number is (571) 272-3825. The examiner can normally be reached on M-F: 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 2137
5/6/2009

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